

Frequency of Scabies in Iraq: Survey in a Dermatology Clinic

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Abstract

Background: The burden of scabies is highest in tropical countries, but recent data from Iraq are scanty.

Objective: To estimate the frequency of scabies in patients of a dermatology clinic in central Iraq.

Methodology: The study was conducted in Tikrit (Iraq), between May 2007 and February 2008. A total of 1,194 patients presenting to a dermatology clinic were included in the study.

Results: During the study period, 132 [1.1%] patients with scabies were identified. The frequency was 13.5% in males and 8.6% in females [P = 0.007]. Frequency in children was 15.6% and 9.8% in adults [P = 0.007]. About 91% of cases were younger than 45 years. The treatment of scabies cases with 5% permethrin cream resulted in a cure rate of 80.3% following a single application, and was increased to 95.5% after a second application. Cure was achieved in all cases after a third application.

Conclusion: Prevalence of scabies was high in a dermatology clinic, and prisoners were identified as high-risk group. Mass treatment of scabies either by oral ivermectin or topical permethrin is suggested.

Key Words: scabies, frequency, prisoner, Iraq

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Introduction

Scabies is caused by *Sarcoptes scabiei* var. *hominis*. The burden of disease is highest in tropical countries, where scabies is endemic [1]. Epidemiological studies worldwide have suggested a 7- to 28-year cyclic pattern of disease prevalence [2-8]. Scabies is particularly common in resource-poor communities with crowded living conditions. Some studies have suggested higher rates in urban areas and an increased incidence during winter months [3-5]. The disease is also more common in institutional environments such as prisons and old-age homes, where outbreaks of the disease are frequently reported [6]. Spreading of scabies usually occurs during unfavorable events such as wars, floods, earthquakes, and other natural and human-induced critical times. The prevalence of scabies ranges 0.4% to 50% in different settings [6-9]. In Iraq, in some population-based studies, prevalence of the disease was reported as 3.3% in Basrah (a city in the southern part of the country), 1.2% in Tikrit, and 1.9% in Samara (cities in the central part of the country), and 2.7% in Kirkuk (a city in northern Iraq) [10-13]. In recent years, scabies appear to have become endemic in Iraq, probably due to the spread of the disease in prisons. Infected prisoners act as a source of infection

for their family members and relatives. This study was performed to estimate the prevalence of scabies in our district.

Materials and methods

The study was conducted in Tikrit, a city of about 100,000 inhabitants, located 170 kilometers north of Baghdad, the capital of Iraq. Health care in Tikrit is provided by a 400-bed teaching hospital, two general hospitals, and six primary health care centers; however, following the Iraq invasion, people prefer to go to clinics located near to their homes.

All patients who presented to the dermatology clinic in Tikrit during a period of nine months (19 May 2007 to 19 February 2008) were included in the study. The patients were either seeking medical care of their own accord or were referred by general practitioners to the clinic. Generally, the patients presenting to the dermatology clinic represent about 20% of the total population seeking medical care. Cases of scabies were diagnosed according to conventional criteria [14]. A presumptive diagnosis of scabies was based on symptomatic complaints of pruritus and physical examination of the site involved. The entire body of each patient was examined. Scabies burrows were visualized with

Table 1. Study population

Group	Number	Percent	Mean age in years [\pm SD]
Male	438	36.7	31.2 [13.2]
Female	494	41.4	32.7 [18.8]
Children	262	21.9	5.5 [3.8]
Total	1194	100	26.5 [18.3]

mineral oil or ink. Definite diagnosis was obtained by microscopic identification of mites or their eggs or feces by scraping a sample of the site of a burrow or from under the patient’s fingernails.

After diagnosis, each patient received 5% permethrin cream and was instructed to apply the drug to his or her whole body from the neck down, to be washed off after 8 hours for children and 14 hours for adults [15]. Family members of infected individuals were examined if they were brought to the clinic. All patients were followed for four weeks after initiation of the treatment. The information regarding each patient’s demographic characteristics and clinical state was collected in a card file system. Informed consent was taken from each patient for study inclusion. The study was approved by the Tikrit University Ethical Committee.

Statistical Analysis

The values for age were reported as mean [\pm SD], while that of prevalence was presented as a percent. The numbers were compared with regard to gender and age. The Chi square test was used to determine the significance of differences between the groups with regard to prevalence and frequency. The student t test was used for comparison between age means of the groups. P value of < 0.05 was considered as significant.

Results

A total of 1,194 patients who presented to the clinic with complaints of skin diseases were included in the study. Of this total, 932 (78.1%) were adult [438 (36.7%) were male; 494 (41.4%) were female] and 262 (21.9%) were children. The total number of males was 592 (49.6%), while that of females was 602 (50.4%). Children were defined as any subject 12 years old and younger. The mean age of participants was 26.5 (\pm 18.3) years (Table 1).

We identified 132 (11.1%; 95% CI, 9.3 - 13) patients with scabies. Their ages ranged from 2

months to 85 years, with a mean age (22.6 \pm 15.6, P < 0.01) considered lower than that of the general study population. In males, frequency was 13.5% [95% CI, 10.9 – 16.6], while it was 8.6% [95% CI, 6.6 – 11.2] in females [P = 0.007] and 15.6% [95% CI, 11.6 – 20.7] in children (Table 1). Frequency in children was 15.6% [95% CI, 11.5 - 20.7], while it was 9.8% [95% CI, 7.97 - 11.89] in adults [P = 0.007]. When the cases were subdivided into primary cases (prisoners) and contact cases, the rate of primary cases was only 16.7% (all are males) while 83.3% of cases were contacts of prisoners. Furthermore, contamination rate was 24.2% in males, 28% in females and 31.1% in children (Table 2). Unfortunately, the contamination rate was 4.1 times higher in contacts compared with primary cases (Table 3).

Table 2. Incidence of scabies

Group	Mean age [\pm SD]	Cases number	Incidence to total cases %	Rate within group %
Male	30.7 [9.0]	54	40.9	12.3
Female	32.5 [11.5]	37	28.0	7.5
Children	6.2 [3.0]	41	31.1	15.6
Total	22.6 [15.6]	132	100	11.1

Male to Female ratio= 1.5

The age distribution of cases is shown in Table 3. About 91% of cases were younger than 45 years of age and the highest prevalence was in children [15.6%], followed by the age group 30 to 44 years [14.7%]. The differences in prevalence between the age groups were significant [P = 0.005] (Table 3). Crusted lesions were detected in 71% of cases.

The treatment of cases with 5% permethrin cream gave a cure rate of 80.3% following a single application. This was increased to 95.5% after a second application and complete cure was achieved after a third application (Table 4).

Discussion

The present study indicated a high frequency of scabies in patients presenting to a dermatology clinic. Frequency was higher overall in children and prisoners than in other members of the study group. In Iraq, previously reported studies indicated lower prevalence rates than those identified in our

Table 3. Cases frequency in regards to primary source of infection

Group	Number	Percent
Primary infection (Prisoner)	22	16.7
Contacts cases		
Total	110	83.3
Male	32	24.2
Female	37	28.0
Children	41	31.1
Grand total	132	100

Ratio of Contact cases to primary cases = 4.1

investigation. A community-based study in Basrah in the southern part of Iraq reported a prevalence of 3.3% [10]. In two other community-based studies performed in central Iraq in the city of Tikrit and in Kirkuk, a city in the northwest part of the country, the prevalence was reported at 1.2% and 2.76% respectively [11,13]. In addition, in a hospital-based study performed in central Iraq in the city of Samara, the prevalence rate was 1.9% [12].

Variations in the study population and their selection criteria make it difficult to determine the prevalence of scabies in the general population based on our study findings. However, our data show that scabies is common in patients presenting to a dermatology clinic, and this finding may be used as an indicator of the general population. In addition, scabies was common in prisoners, whose numbers have increased considerably in the last years. Thus, we believe that our data suggest that there could be a potential epidemic outbreak of the disease in the future.

The limitation for this hospital-based study may overestimate or underestimate the true incidence of the disease. However, the increase in the incidence of the disease may reflect the impact of the problem on the community, because the previous hospital-based studies had indicated lower incidence rates. In addition, this increase in the frequency coincided with the increase in the number of incarcerated individuals. Our findings indicate that incarceration and crowding may lead to higher frequency not only in prisons, but also in the general population. The presence of an infection focus in the community represents an amplifier of the disease in the population.

Scabies is transmitted by direct skin-to-skin contact. The average host has only 5 to 10 mites. In crusted scabies, patients can be infected with millions of mites and are therefore highly contagious [16], which may explain the high frequency of cases in

family contacts of the prisoners (83.3%) as compared to primary cases (16.7%), since crusted lesions were found in 71% of the diagnosed cases. The contacts of primary cases that include other family members subsequently act as a source of infection. These individuals are usually neglected by health care professionals and as a result they may spread the disease in the family with increased risk of epidemics. Family members should be examined and treated as well. Control in endemic settings may also be achieved by mass treatment in prisons or endemic communities [1].

In the present study, topical application of 5% permethrin cream demonstrated a cure rate of 80.3% following a single application. The cure rate increased to 95.5% after a second application and complete cure was achieved for all cases after the third application. Thus 5% topical permethrin cream was an effective treatment approach for scabies. In addition, community treatment of scabies by mass application of permethrin to all families of prisoners irrespective of symptoms is suggested. As reported in the literature, this approach to scabies control was effective and demonstrated excellent control rates [17].

Table 4. Cases and age group

Age group in year	Number	Percent
12 and below	41	31.1
13 – 29	37	28.0
30 – 44	42	31.8
45 – 59	8	6.0
60 and above	4	3.0
Total	132	100

The cure rate following a single application of topical permethrin as demonstrated in this study was lower than that reported for other geographical areas [15,18]. In addition, the cure rate demonstrated in the present study was superior to a single dose [19] and inferior to two doses of ivermectin separated by two weeks [20].

The topical application of permethrin is messy, time-consuming, and expensive. Furthermore, its efficacy is diminished by poor patient compliance, such as incomplete application or premature washing away of the treatment. Oral ivermectin is an effective and safe way of decreasing disease burden among members of a closed population where risk of cross-infection is very high [21-26]. In endemic settings, ivermectin has major advantages over topical

Table 5. Permethrin treatment response.

Application	Number	Percent
Single	106	80.3
Twice	126	95.5
Three	132	100

treatment because it is far more convenient to use and there is no problem with incomplete application or with the treatment being prematurely washed out [27]. The drug can be administered in a dose of a 3 mg tablet (half a tablet for a child) to family contacts of primary cases. Unfortunately, ivermectin is not available in Iraq, so treatment with topical permethrin is suggested. The reported clinical trials on the use of oral ivermectin indicate that the drug is an effective and practical agent in the control of scabies [7,27,28]. In order to control scabies and to prevent its further spread, improvements in health care delivery are of vital importance now in Iraq. Furthermore, the health care delivery system in Iraq is encouraged to implement oral ivermectin for scabies prevention and control.

The control of scabies in children is an important goal since the frequency of the disease in children, as this study indicated, is high (15.6%) and forms about one third of the cases (31.1%). Scabies control would lead to the reduction of skin sores and hematuria in children [27]. Secondary bacterial infections in scabies are most commonly due to *Staphylococcus aureus*, group (A) β hemolytic Streptococci or peptostreptococci [29]. Secondary infections caused by these bacteria may result in further complications which can be followed by renal damage in children. Therefore, scabies control in children produces great health benefits.

In conclusion, scabies frequency was high in the studied population, and there is possibility of outbreaks and future endemicity. Mass treatment of scabies either by oral ivermectin or topical permethrin is suggested. Contact tracing is an important approach for scabies control and prevention.

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